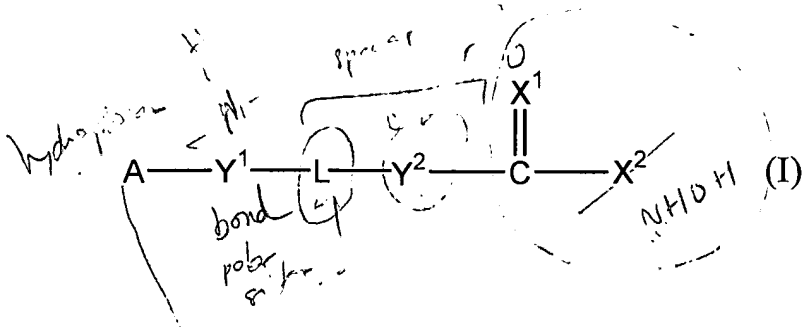
WHAT IS CLAIMED IS:

1. A method of inhibiting histone deacetylation activity in cells comprising contacting the cells with an effective amount of a compound of formula (I), thereby treating one or more disorders mediated by histone deacetylase; said compound having the following formula:



(I)

wherein

A is a cyclic moiety selected from the group consisting of C_{3-14} cycloalkyl, 3-14 membered heterocycloalkyl, C_{4-14} cycloalkenyl, 3-8 membered heterocycloalkenyl, aryl, or heteroaryl; the cyclic moiety being optionally substituted with alkyl, alkenyl, alkynyl, alkoxy, hydroxyl, hydroxylalkyl, halo, haloalkyl, amino, alkylcarbonyloxy, alkyloxycarbonyl, alkylcarbonyl, alkylsulfonylamino, aminosulfonyl, or alkylsulfonyl; or A is a saturated branched C_{3-12} hydrocarbon chain or an unsaturated branched C_{3-12} hydrocarbon chain optionally interrupted by -O-, -S-, -N(R^a)-, -C(O)-, -N(R^a)-SO_2-, -SO_2-N(R^a)-, -N(R^a)-C(O)-O-, -O-C(O)-N(R^a)-, -N(R^a)-C(O)-N(R^b)-, -O-C(O)-, -C(O)-O-, -O-SO_2-, -SO_2-O-, or -O-C(O)-O-, where each of R^a and R^b, independently, is hydrogen, alkyl, alkenyl, alkynyl, alkoxy, hydroxylalkyl, hydroxyl, or haloalkyl; each of the saturated and the unsaturated branched hydrocarbon chain being optionally substituted with alkyl, alkenyl, alkynyl, alkoxy, hydroxyl, hydroxylalkyl, halo, haloalkyl, amino, alkylcarbonyloxy, alkyloxycarbonyl, alkylcarbonyl, alkylsulfonylamino, aminosulfonyl, or alkylsulfonyl;

each of Y^1 and Y^2, independently, is -CH_2-, -O-, -S-, -N(R^c)-, -N(R^c)-C(O)-O-, -O-C(O)-N(R^c)-, -N(R^c)-C(O)-N(R^d)-, -O-C(O)-O-, or a bond; each of R^c and R^d, independently, being hydrogen, alkyl, alkenyl, alkynyl, alkoxy, hydroxylalkyl, hydroxyl, or haloalkyl;

L is a straight C_{2-12} hydrocarbon chain optionally containing at least one double bond, at least one triple bond, or at least one double bond and one triple bond; said hydrocarbon chain being optionally substituted with C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, hydroxyl, halo, amino, nitro, cyano, C_{3-5} cycloalkyl, 3-5 membered heterocycloalkyl,

monocyclic aryl, 5-6 membered heteroaryl, C_{1-4} alkylcarbonyloxy, C_{1-4} alkyloxycarbonyl, C_{1-4} alkylcarbonyl, or formyl; and further being optionally interrupted by -O-, -N(R^e)-, -N(R^e)-C(O)-O-, -O-C(O)-N(R^e)-, -N(R^e)-C(O)-N(R^f)-, or -O-C(O)-O-; each of R^e and R^f, independently, being hydrogen, alkyl, alkenyl, alkynyl, alkoxy, hydroxylalkyl, hydroxyl, or haloalkyl;

X^1 is O or S; and

X^2 is -OR^1, -SR^1, -NR^3-OR^1, -NR^3-SR^1, -C(O)-OR^1, -CHR^4-OR^1, -N=N-C(O)-$N(R^3)_2$, or -O-CHR^4-O-C(O)-R^5, where each of R^1 and R^2, independently, is hydrogen, alkyl, hydroxylalkyl, haloalkyl, or a hydroxyl protecting group; R^3 is hydrogen, alkyl, alkenyl, alkynyl, alkoxy, hydroxylalkyl, hydroxyl, haloalkyl, or an amino protecting group; R^4 is hydrogen, alkyl, hydroxylalkyl, or haloalkyl; R^5 is alkyl, hydroxylalkyl, or haloalkyl; and provided that when L is a C_{2-3} hydrocarbon containing no double bonds and X^2 is -OR^1, Y^1 is not a bond and Y^2 is not a bond;

or a salt thereof; and

determining whether the level of acetylated histones in the treated cells is higher than in untreated cells under the same conditions.

2. The method of claim 1, wherein X^1 is O.

3. The method of claim 1, wherein X^1 is S.

4. The method of claim 1, wherein X^2 is -OR^1, -NR^3-OR^1, -C(O)-OR^1, -CHR^4-OR^1, or -O-CHR^4-O-C(O)-R^5.

5. The method of claim 1, wherein X^2 is -OR^1, -NR^3-OR^1, -C(O)OR^1, or -O-CHR^4-O-C(O)-R^5.

6. The method of claim 1, wherein each of Y^1 and Y^2, independently, is -CH_2-, -O-, -N(R^c)-, or a bond.

7. The method of claim 1, wherein each of Y^1 and Y^2, independently, is -CH_2- or a bond.

8. The method of claim 1, wherein L is a saturated hydrocarbon chain.

9. The method of claim 8, wherein L is a C_{3-8} hydrocarbon chain substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl$)_2$.

10. The method of claim 1, wherein L is an unsaturated hydrocarbon chain containing at least one double bond and no triple bond.

11. The method of claim 10, wherein L is an unsaturated C_{4-8} hydrocarbon chain substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl$)_2$.

12. The method of claim 10, wherein the double bond is in trans configuration.

13. The method of claim 1, wherein L is an unsaturated hydrocarbon chain containing at least one double bond and one triple bond.

14. The method of claim 13, wherein L is an unsaturated C_{4-8} hydrocarbon chain substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl$)_2$.

15. The method of claim 13, wherein the double bond is in trans configuration.

16. The method of claim 1, wherein A is a C_{5-8} cycloalkenyl or 5-8 membered heteroalkenyl containing at least one double bonds.

17. The method of claim 1, wherein A is phenyl, naphthyl, indanyl, or tetrahydronaphthyl.

18. The method of claim 1, wherein A is phenyl optionally substituted with alkyl alkenyl, alkynyl, alkoxy, hydroxyl, hydroxylalkyl, halo, haloalkyl, or amino.

19. The method of claim 18, wherein L is a saturated C_{3-8} hydrocarbon chain substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl$)_2$.

20. The method of claim 19, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, $-O-$, $-N(R^a)-$, or a bond.

21. The method of claim 18, wherein L is an unsaturated C_{4-8} hydrocarbon chain containing at least one double bond and no triple bond, said unsaturated hydrocarbon chain optionally substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl$)_2$.

22. The method of claim 21, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, $-O-$, $-N(R^c)-$, or a bond.

23. The method of claim 18, wherein L is an unsaturated hydrocarbon chain containing at least one double bond and one triple bond, optionally substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl$)_2$.

24. The method of claim 23, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, $-O-$, $-N(R^c)-$, or a bond.

25. The method of claim 1, wherein A is a saturated branched C_{4-10} hydrocarbon chain optionally interrupted by $-N(R^a)-$, $-N(R^a)-C(O)-O-$, $-O-C(O)-N(R^a)-$, $-N(R^a)-C(O)-N(R^b)-$, $-O-C(O)-$, or $-C(O)-O-$ where each of R^a and R^b, independently, is hydrogen, alkyl, alkoxy, hydroxylalkyl, or hydroxyl.

26. The method of claim 25, wherein L is a saturated C_{3-8} hydrocarbon chain substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl$)_2$.

27. The method of claim 26, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, $-O-$, $-N(R^a)-$, or a bond.

28. The method of claim 25, wherein L is an unsaturated C_{4-8} hydrocarbon chain containing only double bonds, said unsaturated hydrocarbon chain optionally substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl$)_2$.

29. The method of claim 28, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, -O-, $-N(R^c)-$, or a bond.

30. The method of claim 25, wherein L is an unsaturated hydrocarbon chain containing at least one double bond and one triple bond, optionally substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl)$_2$.

31. The method of claim 30, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, -O-, $-N(R^c)-$, or a bond.

32. The method of claim 1, wherein A is an unsaturated branched C_{4-10} hydrocarbon chain optionally interrupted by $-N(R^a)-$, $-N(R^a)-C(O)-O-$, $-O-C(O)-N(R^a)-$, $-N(R^a)-C(O)-N(R^b)-$, -O-C(O)-, or -C(O)-O- where each of R^a and R^b, independently, is hydrogen, alkyl, alkoxy, hydroxylalkyl, or hydroxyl.

33. The method of claim 32, wherein A contains only double bonds.

34. The method of claim 33, wherein L is a saturated C_{3-8} hydrocarbon chain optionally substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl)$_2$.

35. The method of claim 34, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, -O-, $-N(R^c)-$, or a bond.

36. The method of claim 33, wherein L is an unsaturated C_{4-8} hydrocarbon chain containing only double bonds, said unsaturated hydrocarbon chain optionally being substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl)$_2$.

37. The method of claim 36, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, -O-, $-N(R^c)-$, or a bond.

38. The method of claim 33, wherein L is an unsaturated C_{4-8} hydrocarbon chain containing at least one double bond and one triple bond, said unsaturated hydrocarbon chain optionally being substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl$)_2$.

39. The method of claim 38, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, -O-, $-N(R^c)-$, or a bond.

40. The method of claim 1, wherein said compound is 5-phenyl-2,4-pentadienoic acid, 3-methyl-5-phenyl-2,4-pentadienoic acid, 4-methyl-5-phenyl-2,4-pentadienoic acid, 4-chloro-5-phenyl-2,4-pentadienoic acid, 5-(4-dimethylaminophenyl)-2,4-pentadienoic acid, 5-(2-furyl)-2,4-pentadienoic acid, 5-phenyl-2-en-4-yn-pentanoic acid, 6-phenyl-3,5-hexadienoic acid, 7-phenyl-2,4,6-heptatrienoic acid, 8-phenyl-3,5,7-octatrienoic acid, potassium 2-oxo-6-phenyl-3,5-hexadienoate, potassium 2-oxo-8-phenyl-3,5,7-octatrienoate, cinnamoylhydroxamic acid, methyl-cinnamoylhydroxamic acid, 4-cyclohexanebutyroylhydroxamic acid, benzylthioglycoloylhydroxamic acid, 5-phenylpentanoylhydroxamic acid, 5-phenyl-2,4-pentadienoylhydroxamic acid, N-methyl-5-phenyl-2,4-pentadienoylhydroxamic acid, 3-methyl-5-phenyl-2,4-pentadienoylhydroxamic acid, 4-methyl-5-phenyl-2,4-pentadienoyl hydroxamic acid, 4-chloro-5-phenyl-2,4-pentadienoylhydroxamic acid, 5-(4-dimethylaminophenyl)-2,4-pentadienoylhydroxamic acid, 5-phenyl-2-en-4-yn-pentanoylhydroxamic acid, 5-(2-furyl)-2,4-pentadienoylhydroxamic acid, 6-phenylhexanoylhydroxamic acid, 6-phenyl-3,5-hexadienoylhydroxamic acid, N-methyl-6-phenyl-3,5-hexadienoylhydroxamic acid, 7-phenylheptanoylhydroxamic acid, 7-phenyl-2,4,6-hepta-trienoylhydroxamic acid or 8-phenyloctanoylhydroxamic acid.

41. The method of claim 1, wherein said compound is 5-phenyl-2,4-pentadienoic acid, 8-phenyl-3,5,7-octatrienoic acid, potassium 2-oxo-8-phenyl-3,5,7-octatrienoate,

benzylthioglycoloylhydroxamic acid, 5-phenyl-2,4-pentadienoylhydroxamic acid, 6-phenylhexanoylhydroxamic acid, 7-phenyl-2,4,6-hepta-trienoylhydroxamic acid, or 8-phenyloctanoylhydroxamic acid.

42. The method of claim 1, wherein the cells are treated with a compound of formula (I) in vivo.

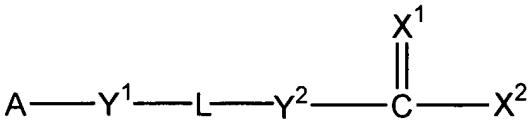
43. The method of claim 1, wherein the cells are treated with a compound of formula (I) in vitro.

44. The method of claim 1, wherein the cells being treated are cancerous.

45. The method of claim 1, wherein the disorder is selected from the group consisting of cancer, hemoglobinopathies, thalassemia, sickle cell anemia, cystic fibrosis, protozoan infection, adrenoleukodystrophy, alpha-1 anti-trypsin, retrovirus gene vector reactivation, wound healing, hair growth, peroxisome biogenesis disorder, and adrenoleukodystrophy.

46. The method of claim 1, wherein the disorder is cancer, cystic fibrosis, or adrenoleukodystrophy.

47. A method of inhibiting histone deacetylase in cells comprising contacting the cells with an effective amount of a compound of formula (I):



(I)

wherein

A is phenyl optionally substituted with alkyl alkenyl, alkynyl, alkoxy, hydroxyl, hydroxylalkyl, halo, haloalkyl, or amino;

each of Y^1 and Y^2, independently, is $-CH_2-$, -O-, -S-, $-N(R^c)-$, or a bond; where R^c is hydrogen, alkyl, alkenyl, alkynyl, alkoxy, hydroxylalkyl, hydroxyl, or haloalkyl;

L is a straight C_{2-12} hydrocarbon chain optionally containing at least one double bond, at least one triple bond, or at least one double bond and one triple bond; said hydrocarbon chain being optionally substituted with C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, hydroxyl, halo, amino, nitro, cyano, C_{3-5} cycloalkyl, 3-5 membered heterocycloalkyl, monocyclic aryl, 5-6 membered heteroaryl, C_{1-4} alkylcarbonyloxy, C_{1-4} alkyloxycarbonyl, C_{1-4} alkylcarbonyl, or formyl; and further being optionally interrupted by -O-, -N(R^e)-, -N(R^e)-C(O)-O-, -O-C(O)-N(R^e)-, -N(R^e)-C(O)-N(R^f)-, or -O-C(O)-O-; each of R^e and R^f, independently, being hydrogen, alkyl, alkenyl, alkynyl, alkoxy, hydroxylalkyl, hydroxyl, or haloalkyl;

X^1 is O or S; and

X^2 is -OR^1, -SR^1, -NR^3-OR^1, -NR^3-SR^1, -C(O)-OR^1, -CHR^4-OR^1, -N=N-C(O)-N(R^3)$_2$, or -O-CHR^4-O-C(O)-R^5; where each of R^1 and R^2, independently, is hydrogen, alkyl, hydroxylalkyl, haloalkyl, or a hydroxyl protecting group; R^3 is hydrogen, alkyl, alkenyl, alkynyl, alkoxy, hydroxylalkyl, hydroxyl, haloalkyl, or an amino protecting group; R^4 is hydrogen, alkyl, hydroxylalkyl, or haloalkyl; R^5 is alkyl, hydroxylalkyl, or haloalkyl; and provided that when L is a C_{2-3} hydrocarbon containing no double bonds and X^2 is -OR^1, Y^1 is not a bond and Y^2 is not a bond;

or a salt thereof; and

determining whether the level of acetylated histones in the treated cells is higher than in untreated cells under the same conditions.

48. The method of claim 47, wherein L is a saturated C_{3-8} hydrocarbon chain substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, -NH_2, -NH(C_{1-2} alkyl), or -N(C_{1-2} alkyl)$_2$.

49. The method of claim 48, wherein X^1 is O; X^2 is -OR^1, -NR^3-OR^1, -C(O)OR^1, or -O-CHR^4-O-C(O)-R^5; and each of Y^1 and Y^2, independently, is -CH_2-, -O-, -N(R^a)-, or a bond.

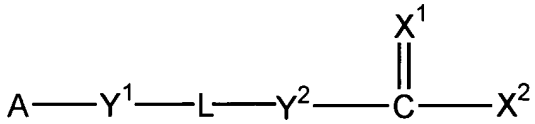
50. The method of claim 47, wherein L is an unsaturated C_{4-8} hydrocarbon chain containing only double bonds, said unsaturated hydrocarbon chain optionally substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, -NH_2, -NH(C_{1-2} alkyl), or -N(C_{1-2} alkyl)$_2$.

51. The method of claim 50, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, -O-, $-N(R^c)-$, or a bond.

52. The method of claim 47, wherein L is an unsaturated hydrocarbon chain containing at least one double bond and one triple bond, optionally substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl$)_2$.

53. The method of claim 53, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, -O-, $-N(R^c)-$, or a bond.

54. A method of treating a histone deacetylase-mediated disorder comprising administering to a subject in need thereof a therapeutically effective amount of compound of formula (I):



(I)

wherein

A is a cyclic moiety selected from the group consisting of C_{3-14} cycloalkyl, 3-14 membered heterocycloalkyl, C_{4-14} cycloalkenyl, 4-14 membered heterocycloalkenyl, monocyclic aryl, or heteroaryl; the cyclic moiety being optionally substituted with alkyl, alkenyl, alkynyl, alkoxy, hydroxyl, hydroxylalkyl, halo, haloalkyl, amino, alkylcarbonyloxy, alkyloxycarbonyl, alkylcarbonyl, alkylsulfonylamino, aminosulfonyl, or alkylsulfonyl; or A is a saturated branched C_{3-12} hydrocarbon chain or an unsaturated branched C_{3-12} hydrocarbon chain optionally interrupted by -O-, -S-, $-N(R^a)-$, -C(O)-, $-N(R^a)-SO_2-$, $-SO_2-N(R^a)-$, $-N(R^a)-C(O)-O-$, $-O-C(O)-N(R^a)-$, $-N(R^a)-C(O)-N(R^b)-$, -O-C(O)-, -C(O)-O-, $-O-SO_2-$, $-SO_2-O-$, or -O-C(O)-O- where each of R^a and R^b, independently, is hydrogen, alkyl, alkenyl, alkynyl, alkoxy, hydroxylalkyl, hydroxyl, or haloalkyl; each of the saturated and the unsaturated branched hydrocarbon chain being optionally substituted with alkyl, alkenyl, alkynyl, alkoxy, hydroxyl, hydroxylalkyl, halo, haloalkyl, amino, alkylcarbonyloxy,

alkyloxycarbonyl, alkylcarbonyl, alkylcarbonylamino, aminocarbonyl, alkylsulfonylamino, aminosulfonyl, or alkylsulfonyl;

each of Y^1 and Y^2, independently, is $-CH_2-$, -O-, -S-, $-N(R^c)-$, $-N(R^c)-C(O)-O-$, $-O-C(O)-N(R^c)-$, $-N(R^c)-C(O)-N(R^d)-$, -O-C(O)-O-, or a bond; each of R^c and R^d, independently, being hydrogen, alkyl, alkenyl, alkynyl, alkoxy, hydroxylalkyl, hydroxyl, or haloalkyl;

L is a straight C_{3-12} hydrocarbon chain optionally containing at least one double bond, at least one triple bond, or at least one double bond and one triple bond; said hydrocarbon chain being optionally substituted with C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, hydroxyl, halo, amino, nitro, cyano, C_{3-5} cycloalkyl, 3-5 membered heterocycloalkyl, monocyclic aryl, 5-6 membered heteroaryl, C_{1-4} alkylcarbonyloxy, C_{1-4} alkyloxycarbonyl, C_{1-4} alkylcarbonyl, or formyl; and further being optionally interrupted by -O-, $-N(R^e)-$, $-N(R^e)-C(O)-O-$, $-O-C(O)-N(R^e)-$, $-N(R^e)-C(O)-N(R^f)-$, or -O-C(O)-O-; each of R^e and R^f, independently, being hydrogen, alkyl, alkenyl, alkynyl, alkoxy, hydroxylalkyl, hydroxyl, or haloalkyl;

X^1 is O or S; and

X^2 is $-OR^1$, $-SR^1$, $-NR^3-OR^1$, $-NR^3-SR^1$, $-C(O)-OR^1$, $-CHR^4-OR^1$, $-N=N-C(O)-N(R^3)_2$, or $-O-CHR^4-O-C(O)-R^5$; where each of R^1 and R^2, independently, is hydrogen, alkyl, hydroxylalkyl, haloalkyl, or a hydroxyl protecting group; R^3 is hydrogen, alkyl, alkenyl, alkynyl, alkoxy, hydroxylalkyl, hydroxyl, haloalkyl, or an amino protecting group; R^4 is hydrogen, alkyl, hydroxylalkyl, or haloalkyl; R^5 is alkyl, hydroxylalkyl, or haloalkyl; and provided that when L is a C_{2-3} hydrocarbon containing no double bonds and X^2 is $-OR^1$, Y^1 is not a bond and Y^2 is not a bond;

or a salt thereof.

55. The method of claim 54, wherein A is phenyl optionally substituted with alkyl alkenyl, alkynyl, alkoxy, hydroxyl, hydroxylalkyl, halo, haloalkyl, or amino.

56. The method of claim 55, wherein L is a saturated C_{3-8} hydrocarbon chain substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl)$_2$.

57. The method of claim 56, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, -O-, $-N(R^a)-$, or a bond.

58. The method of claim 55, wherein L is an unsaturated C_{4-8} hydrocarbon chain containing only double bonds, said unsaturated hydrocarbon chain optionally substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl$)_2$.

59. The method of claim 58, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, -O-, $-N(R^c)-$, or a bond.

60. The method of claim 55, wherein L is an unsaturated hydrocarbon chain containing at least one double bond and one triple bond, optionally substituted with C_{1-2} alkyl, C_{1-2} alkoxy, hydroxyl, $-NH_2$, $-NH(C_{1-2}$ alkyl), or $-N(C_{1-2}$ alkyl$)_2$.

61. The method of claim 60, wherein X^1 is O; X^2 is $-OR^1$, $-NR^3-OR^1$, $-C(O)OR^1$, or $-O-CHR^4-O-C(O)-R^5$; and each of Y^1 and Y^2, independently, is $-CH_2-$, -O-, $-N(R^c)-$, or a bond.

62. The method of claim 54, wherein said disorder is selected from the group consisting of cancer, hemoglobinopathies, thalassemia, sickle cell anemia, cystic fibrosis, protozoan infection, adrenoleukodystrophy, alpha-1 anti-trypsin, retrovirus gene vector reactivation, wound healing, hair growth, peroxisome biogenesis disorder, and adrenoleukodystrophy.

63. The method of claim 54, wherein said disorder is cancer, cystic fibrosis, or adrenoleukodystrophy.

64. The method of claim 54, wherein said compound 5-phenyl-2,4-pentadienoic acid, 3-methyl-5-phenyl-2,4-pentadienoic acid, 4-methyl-5-phenyl-2,4-pentadienoic acid, 4-chloro-5-phenyl-2,4-pentadienoic acid, 5-(4-dimethylaminophenyl)-2,4-pentadienoic acid, 5-(2-furyl)-2,4-pentadienoic acid, 5-phenyl-2-en-4-yn-pentanoic acid, 6-phenyl-3,5-hexadienoic

phenyl-2,4-pentadienoylhydroxamic acid, 3-methyl-5-phenyl-2,4-pentadienoylhydroxamic acid, 4-methyl-5-phenyl-2,4-pentadienoyl hydroxamic acid, 4-chloro-5-phenyl-2,4-pentadienoylhydroxamic acid, 5-(4-dimethylaminophenyl)-2,4-pentadienoylhydroxamic acid, 5-phenyl-2-en-4-yn-pentanoylhydroxamic acid, 5-(2-furyl)-2,4-pentadienoylhydroxamic acid, 6-phenylhexanoylhydroxamic acid, 6-phenyl-3,5-hexadienoylhydroxamic acid, N-methyl-6-phenyl-3,5-hexadienoylhydroxamic acid, 7-phenylheptanoylhydroxamic acid, 7-phenyl-2,4,6-hepta-trienoylhydroxamic acid or 8-phenyloctanoylhydroxamic acid.

65. The method of claim 54, wherein said compound is 5-phenyl-2,4-pentadienoic acid, 8-phenyl-3,5,7-octatrienoic acid, potassium 2-oxo-8-phenyl-3,5,7-octatrienoate, benzylthioglycoloylhydroxamic acid, 5-phenyl-2,4-pentadienoylhydroxamic acid, 6-phenylhexanoylhydroxamic acid, 7-phenyl-2,4,6-hepta-trienoylhydroxamic acid, or 8-phenyloctanoylhydroxamic acid.

66. The method of claim 54, wherein Y^1 is not a bond.